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Report on the technical review of the third biennial report of Japan

Developed country Parties were requested by decision 2/CP.17 to submit their third biennial report to the secretariat by 1 January 2018. This report presents the results of the technical review of the third biennial report of Japan, conducted by an expert review team in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention".

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Contents

Abbreviations and acronyms

ACE	Actions for Cool Earth
AR4	Fourth Assessment Report of the Intergovernmental Panel on Climate Change
BR	biennial report
CCS	carbon dioxide capture and storage
CH_4	methane
CO_2	carbon dioxide
CO_2 eq	carbon dioxide equivalent
COP	Conference of the Parties
CRF	common reporting format
CTF	common tabular format
ERT	expert review team
F-gas	fluorinated gas
FY	fiscal year
GCF	Green Climate Fund
GDP	gross domestic product
GEF	Global Environment Facility
GEJE	Great East Japan Earthquake (March 2011)
GHG	greenhouse gas
GWP	global warming potential
GWPH	Global Warming Prevention Headquarters
HFC	hydrofluorocarbon
IPCC	Intergovernmental Panel on Climate Change
IPPU	industrial processes and product use
JBIC	Japan Bank for International Cooperation
JCM	Joint Crediting Mechanism
JICA	Japan International Cooperation Agency
JPY	Japanese yen
LDCF	Least Developed Countries Fund
LED	light-emitting diode
LNG	liquefied natural gas
LULUCF	land use, land-use change and forestry
MAFF	Ministry of Agriculture, Forestry and Fisheries
METI	Ministry of Economy, Trade and Industry
MEXT	Ministry of Education, Culture, Sports, Science and Technology
MLIT	Ministry of Land, Infrastructure, Transport and Tourism
MOE	Ministry of the Environment
MOF	Ministry of Finance
MOFA	Ministry of Foreign Affairs
NA	not applicable
NC	national communication
NDC	nationally determined contribution
NE	not estimated
NEXI	Nippon Export and Investment Insurance
NF_3	nitrogen trifluoride
NIR	national inventory report
NO	not occurring
N_2O	nitrous oxide

PaMs	policies and measures
PFC	perfluorocarbon
PV	photovoltaic
RES	renewable energy sources
SCCF	Special Climate Change Fund
SF_6	sulfur hexafluoride
UNFCCC reporting guidelines on BRs	"UNFCCC biennial reporting guidelines for developed country Parties"
UNFCCC reporting guidelines on NCs	"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications"
WAM	'with additional measures'
WEM	'with measures'
WOM	'without measures'

I. Introduction and summary

A. Introduction

1. This is a report on the in-country technical review of the BR3[1] of Japan. The review was organized by the secretariat in accordance with the "Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention", particularly "Part IV: UNFCCC guidelines for the technical review of biennial reports from Parties included in Annex I to the Convention" (annex to decision 13/CP.20).

2. In accordance with the same decision, a draft version of this report was transmitted to the Government of Japan, which provided comments that were considered and incorporated, as appropriate, into this final version of the report.

3. The review was conducted from 28 May to 2 June 2018 in Tokyo by the following team of nominated experts from the UNFCCC roster of experts: Ms. Patricia Grobben (Belgium), Ms. Thelma Krug (Brazil), Mr. Andrew Rakestraw (United States of America), Mr. Christoph Streissler (Austria) and Mr. Marius Ţăranu (Republic of Moldova). Ms. Grobben and Ms. Krug were the lead reviewers. The review was coordinated by Ms. Veronica Colerio and Ms. Katia Simeonova (UNFCCC secretariat).

B. Summary

4. The ERT conducted a technical review of the information reported in the BR3 of Japan in accordance with the UNFCCC reporting guidelines on BRs (annex I to decision 2/CP.17).

1. Timeliness

5. The BR3 was submitted on 22 December 2017, before the deadline of 1 January 2018 mandated by decision 2/CP.17. The CTF tables were submitted on 22 December 2017. The BR3 was resubmitted on 29 January 2018.

2. Completeness, transparency of reporting and adherence to the reporting guidelines

6. Issues and gaps identified by the ERT related to the reported information are presented in table 1. The information reported by Japan in its BR3 mostly completely adheres to the UNFCCC reporting guidelines on BRs.

Table 1
Summary of completeness and transparency of mandatory information reported by Japan in its third biennial report

Section of BR	*Completeness*	*Transparency*	*Reference to description of recommendations*
GHG emissions and trends	Complete	Transparent	–
Assumptions, conditions and methodologies related to the attainment of the quantified economy-wide emission reduction target	Complete	Mostly transparent	Issue 1 in table 3
Progress in achievement of targets	Mostly complete	Mostly transparent	Issues 1 and 2 in table 5; issue 1 in table 7; issue 2 in table 11

[1] The BR submission comprises the text of the report and the CTF tables, which are both subject to the technical review.

Section of BR	*Completeness*	*Transparency*	*Reference to description of recommendations*
Provision of support to developing country Parties	Mostly complete	Mostly transparent	Issue 1 in table 12; issues 1, 3 and 4 in table 15

Note: A list of recommendations pertaining to the completeness and transparency issues identified in this table is included in chapter III below. The assessment of completeness and transparency by the ERT in this table is based only on the "shall" reporting requirements."

II. Technical review of the information reported in the third biennial report

A. Information on greenhouse gas emissions and removals related to the quantified economy-wide emission reduction target

1. Information on greenhouse gas inventory arrangements, emissions, removals and trends

(a) Technical assessment of the reported information

7. Total GHG emissions[2] excluding emissions and removals from LULUCF increased by 3.0 per cent between 1990 and 2016, whereas total GHG emissions including net emissions and removals from LULUCF increased by 3.6 per cent over the same period. The year with the highest emission levels in Japan to date is 2013. Table 2 illustrates the emission trends by sector and by gas for Japan.

[2] In this report, the term "total GHG emissions" refers to the aggregated national GHG emissions expressed in terms of CO_2 eq excluding LULUCF, unless otherwise specified. Values in this paragraph are calculated based on the 2018 annual submission, version 1.

Table 2
Greenhouse gas emissions by sector and by gas for Japan for the period 1990–2016

	GHG emissions (kt CO_2 eq)						*Change (%)*			*Share (%)*	
	1990	*2000*	*2005*	*2010*	*2015*	*2016*	*1990–2016*	*2005–2016*	*2015–2016*	*1990*	*2016*
Sector											
1. Energy	1 089 394.93	1 196 791.10	1 226 463.57	1 161 126.40	1 173 147.55	1 153 566.77	5.9	–5.9	–1.7	86.0	88.4
A1. Energy industries	368 273.59	402 424.37	454 360.91	451 015.62	500 889.33	532 297.94	44.5	17.2	6.3	29.1	40.8
A2. Manufacturing industries and construction	351 360.77	348 765.46	336 297.08	302 275.96	292 682.35	279 146.90	–20.6	–17.0	–4.6	27.7	21.4
A3. Transport	205 212.49	257 045.49	240 918.07	224 189.20	210 735.86	208 796.39	1.7	–13.3	–0.9	16.2	16.0
A4. and A5. Other	159 383.25	186 208.32	193 403.19	182 286.23	167 627.82	132 086.22	–17.1	–31.7	–21.2	12.6	10.1
B. Fugitive emissions from fuels	5 164.84	2 347.45	1 484.32	1 359.39	1 212.20	1 239.31	–76.0	–16.5	2.2	0.4	0.1
C. CO_2 transport and storage	NE, NO	NE, NO	NE, NO	NE, NO	NE, NO	NA, NE, NO	NA	NA	NA	NA	NA
2. IPPU	110 422.65	108 173.57	86 720.82	80 157.56	92 812.49	95 855.97	–13.2	10.5	3.3	8.7	7.3
3. Agriculture	37 620.75	35 305.46	35 190.66	35 837.76	33 642.46	33 505.37	–10.9	–4.8	–0.4	3.0	2.6
4. LULUCF	–62 445.87	–87 822.29	–91 316.45	–69 814.17	–60 314.55	–56 771.18	–9.1	–37.8	–5.9	NA	NA
5. Waste	29 256.03	31 975.04	27 026.28	23 180.44	21 458.79	21 639.74	–26.0	–19.9	0.8	2.3	1.7
6. Other	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indirect CO_2	5 370.16	4 131.74	3 102.88	2 355.73	2 102.80	2 102.32	–60.9	–32.2	0.0	NA	NA
Gas[a]											
CO_2	1 155 263.41	1 262 734.46	1 286 856.31	1 211 572.87	1 223 666.48	1 204 318.62	4.2	–6.4	–1.6	91.2	92.3
CH_4	44 337.53	37 778.53	35 551.20	34 735.13	31 140.88	30 792.28	–30.6	–13.4	–1.1	3.5	2.4
N_2O	31 739.13	29 689.94	25 063.87	22 475.78	20 979.49	20 676.48	–34.9	–17.5	–1.4	2.5	1.6
HFCs	15 932.31	22 852.00	12 781.83	23 305.23	39 242.60	42 517.72	166.9	232.6	8.3	1.3	3.3
PFCs	6 539.30	11 873.11	8 623.35	4 249.54	3 308.10	3 375.33	–48.4	–60.9	2.0	0.5	0.3
SF_6	12 850.07	7 031.36	5 053.01	2 423.87	2 152.71	2 252.99	–82.5	–55.4	4.7	1.0	0.2
NF_3	32.61	285.77	1 471.75	1 539.74	571.03	634.44	1 845.5	–56.9	11.1	0.0	0.0

	GHG emissions (kt CO_2 eq)						*Change (%)*			*Share (%)*	
	1990	*2000*	*2005*	*2010*	*2015*	*2016*	*1990–2016*	*2005–2016*	*2015–2016*	*1990*	*2016*
Total GHG emissions without LULUCF	**1 266 694.36**	**1 372 245.17**	**1 375 401.33**	**1 300 302.15**	**1 321 061.29**	**1 304 567.85**	**3.0**	**–5.2**	**–1.2**	**100.0**	**100.0**
Total GHG emissions with LULUCF	**1 204 248.49**	**1 284 422.89**	**1 284 084.88**	**1 230 487.98**	**1 260 746.74**	**1 247 796.67**	**3.6**	**–2.8**	**–1.0**	**NA**	**NA**
Total GHG emissions without LULUCF, including indirect CO_2	**1 272 064.52**	**1 376 376.91**	**1 378 504.21**	**1 302 657.89**	**1 323 164.09**	**1 306 670.18**	**2.7**	**–5.2**	**–1.2**	**NA**	**NA**
Total GHG emissions with LULUCF, including indirect CO_2	**1 209 618.65**	**1 288 554.63**	**1 287 187.76**	**1 232 843.72**	**1 262 849.54**	**1 249 899.00**	**3.3**	**–2.9**	**–1.0**	**NA**	**NA**

Source: GHG emission data: Japan's 2018 annual submission, version 1.

[a] Emissions by gas without LULUCF and without indirect CO_2.

8. The increase in total emissions was driven mainly by an increase in CO_2 emissions of 4.2 per cent between 1990 and 2016, attributed to economic growth and associated energy demand. The recent increase in coal consumption for power generation in the energy industries, resulting from a shift from nuclear to fossil fuel-based electricity generation after the GEJE, also played a part. Emissions of HFCs also increased considerably, by 166.9 per cent, in the same period, as a result of substitution by HFCs of ozone-depleting substances controlled by the Montreal Protocol. In contrast, emissions from manufacturing industries decreased by 20.6 per cent from 1990 to 2016. The increasing trend of emissions from transport was reversed in 2002, resulting in an overall increase in emissions of only 1.7 per cent in 2016 compared with the 1990 level.

9. In 2016, CO_2 emissions from the energy sector remained by far the dominant source of total GHG emissions, accounting for 87.8 per cent. The energy sector also accounted for 95.8 per cent of total CO_2 emissions, followed by the IPPU sector, which accounted for only 3.8 per cent. Energy industries accounted for 46.2 per cent of energy-related CO_2 emissions, followed by manufacturing industries and construction, 24.2 per cent, and transport, 18.1 per cent. The most salient increase in emissions stems from energy industries and is due to an increase in solid fuel consumption for electric power generation, particularly since 2011. CH_4 emissions in 2016 were 30.6 per cent lower than those in 1990. Their decrease is due to a decrease in fugitive emissions from solid fuels and a decrease in emissions from the waste sector. N_2O emissions decreased by 34.9 per cent between 1990 and 2016, mainly owing to a technological change in the production of adipic acid.

10. The summary information provided on GHG emissions was consistent with the information reported in the 2017 annual submission.

11. In brief, Japan's national inventory arrangements were established in accordance with Article 7, Chapter 1 ("General provisions"), of the Act on Promotion of Global Warming Countermeasures, which determines domestic measures under the Convention and its Kyoto Protocol. There were no changes in these arrangements since the submission of the BR2. MOE has overall responsibility for the preparation of the national inventory, but compilation of the data and of the NIR is the task of the Greenhouse Gas Inventory Office, which is a part of the Centre for Global Environmental Research of the National Institute for Environmental Studies. The relevant ministries, agencies and organizations provide the Greenhouse Gas Inventory Office with the required data on a regular basis. In the BR3, Japan provided detailed information on the responsibilities of the ministries and other actors involved in the inventory compilation process, as well as the timeline of the annual inventory preparation cycle, which includes data collection, quality control and quality assurance.

(b) Assessment of adherence to the reporting guidelines

12. The ERT assessed the information reported in the BR3 of Japan and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

B. Assumptions, conditions and methodologies related to the quantified economy-wide emission reduction target and related assumptions, conditions and methodologies

1. Technical assessment of the reported information

13. For Japan, the Convention entered into force on 21 March 1994. After the GEJE, Japan revised its earlier pledge for 2020 under the Cancun Agreements and committed in 2013 to reducing its GHG emissions under the Convention by 3.8 per cent below the FY2005 level by FY2020. The new pledge effectively translates to a 5 per cent emission increase in 2020 compared with the 1990 level. In May 2016, Japan resubmitted this pledge and added "or more" so as to capture additional emission reductions resulting from reintegration into the power grid of nuclear power plants that have passed the stringent safety standards adopted after the GEJE.

14. Japan's emission reduction target includes all GHGs included in the "Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories", namely CO_2, CH_4, N_2O, HFCs, PFCs, SF_6 and NF_3. It also includes all IPCC sources and sectors included in the annual GHG inventory. The GWP values used are from the AR4. Net emissions and removals (compared with 1990) from the LULUCF sector are included in the target but not in the 2005 base year. They are accounted using an activity-based approach. Japan reported that it plans to make use of market-based mechanisms to achieve its target, but it did not estimate the contribution of such mechanisms.

15. Japan has chosen to include indirect CO_2 emissions in its emissions inventory as of 2017, and these emissions were reported for the entire time series since 1990. During the review, the Party clarified that it will consider these emissions in the calculation of the progress towards the achievement of its 2020 and 2030 targets, even though estimates for these emissions were not available when the 2020 target was established. In absolute terms, this means that under the Convention, using the inventory data for 2005 included in the BR3, Japan has to reduce its emissions from 1,398,823.62 kt CO_2 eq (in the base year)[3] to 1,354,061.26 kt CO_2 eq or less by 2020.[4]

16. LULUCF emissions and removals are accounted using an activity-based approach with 1990 as the base year. During the review, Japan clarified that emissions and removals from forest-related activities (afforestation, reforestation, deforestation and forest management) are estimated on a gross-net basis compared with 1990, while cropland management, grassland management and revegetation are estimated on a net-net basis compared with 1990. Japan estimates that in 2020, accounted net removals by the four-elected forest-related activities combined and revegetation will reach 38.0 and 1.2 Mt CO_2, respectively. Accounted net removals by agricultural soils are estimated to amount to 7.7 Mt CO_2 in 2020.

17. Japan reported in its BR3 that it intends to use credits from JCM to achieve its 2020 emission reduction target; however, during the review, the Party clarified that it will achieve its 2030 target in its NDC through domestic emission reductions and removals only. In its BR3, Japan reported that it established JCM to quantitatively evaluate GHG emission reductions and removals associated with the diffusion of low-carbon technologies through relevant projects in developing countries. The Party also clarified that as part of the JCM arrangements, host countries usually sign a document stating they will not use JCM credits towards the achievement of their targets under the Convention. Japan explained that JCM is overseen by a joint committee secretariat consisting of, inter alia, representatives from MOFA, METI, MOE and MAFF. Japan is currently working to significantly scale up JCM projects globally, with the aim of achieving 50–100 Mt CO_2 emission reductions in 2030.

2. Assessment of adherence to the reporting guidelines

18. The ERT assessed the information reported in the BR3 of Japan and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 3.

[3] The 2005 base-year emissions are equal to the emissions reported in the national GHG inventory excluding LULUCF emissions but including indirect CO_2 emissions, as included in CTF table 1.

[4] This calculation was made by the ERT, and 3.8 per cent of the 2005 base-year emissions explained in footnote 3 was subtracted.

Table 3
Findings on the quantified economy-wide emission reduction target from the review of the third biennial report of Japan

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation*
1	Reporting requirement specified in paragraph 5 Issue type: transparency Assessment: recommendation	According to CTF table 2(d) in Japan's BR3 submission, LULUCF is included in the base year and target year. However, an explanation provided in the table, as well as in CTF table 4 and verbally by the Party during the review, indicated that LULUCF emissions and removals are not considered for the 2005 base year although they are accounted for in the 2020 target. LULUCF activities for 2020 are accounted for using an activity-based approach and are compared with the 1990 base year. During the review, Japan provided further clarification of its approach and agreed that the information provided in CTF table 2(d) needs to be improved. The ERT recommends that Japan include in its next BR, in CTF table 2(d), a transparent description of the approach used for counting emissions and removals from the elected LULUCF activities in the base year and target year taking into consideration any relevant decisions adopted by the COP.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

C. Progress made towards the achievement of the quantified economy-wide emission reduction target

1. Mitigation actions and their effects

(a) Technical assessment of the reported information

19. Japan provided information on its package of PaMs implemented, by sector and by gas, in order to fulfil its commitments under the Convention and the Paris Agreement. In response to the recommendations made in the previous review report, Japan reported consistent information on its PaMs between the textual and tabular information, as well as including more detail.

20. Japan reported on its policy context and legal and institutional arrangements put in place to implement its commitments and monitor and evaluate the effectiveness of its PaMs. Japan's Basic Environment Law (1993, Law No. 91) is the basis for Japan's climate policy. The law is translated into basic environment plans, which are updated every five years. In 1998 the Japanese Government adopted the Act on Promotion of Global Warming Countermeasures, which provides the framework for the new Plan for Global Warming Countermeasures adopted by the Cabinet in 2016. This plan describes the PaMs aimed at reducing GHG emissions by 26 per cent compared with the FY2013 level by FY2030. In line with this plan, the Japanese Government develops more specific action plans.

21. Under the Plan for Global Warming Countermeasures, Japan has developed a system for monitoring and evaluating the effectiveness of its PaMs. GWPH and the Executive Committee of GWPH annually assesses the progress of individual actions and measures. GWPH has the power to consider improvement and reinforcement of the measures progressing slowly, and to explore new PaMs. This monitoring and evaluation system provides for a revision of targets and measures every three years, using the most recent GHG emission data. During the review, Japan mentioned that the first assessment of progress was undertaken in March 2018, but no changes were made to the portfolio of PaMs.

22. Japan reported on its self-assessment of compliance with its emission reduction target and national rules for taking action against non-compliance. The Plan for Global Warming Countermeasures has six overall concepts that guide Japan's approach to mitigation actions: promoting PaMs that provide benefits for the environment, economy and society in a holistic way; using a combination of policy instruments to ensure achievement of the targets; regularly updating and reviewing the targets in line with the long-term goal of the Paris

Agreement; enhancing research and development of innovative low-carbon technologies; advancing low-carbon technologies globally through JCM and other efforts; and raising public awareness and acknowledging the importance of assessment and review processes (plan-do-check-act cycle).

23. The budget allocated in 2017 for implementing the PaMs under the Plan for Global Warming Countermeasures was JPY 818 billion (USD 7.47 billion), which represented 0.15 per cent of Japan's nominal GDP in that year. Nearly half of this budget is allocated to PaMs that contribute to the Party's NDC.

24. The key overarching cross-sectoral policies reported by Japan are various fiscal, financial and voluntary instruments, as well as mandatory accounting. They comprise a domestic credit scheme (J-Credit Scheme); a tax for climate change mitigation; the Low Carbon Society Establishment Finance Initiative; green bonds; and the introduction of a mandatory GHG accounting, reporting and disclosure programme. These policies and instruments are discussed in paragraphs 25–29 below.

25. The **J-Credit Scheme** aims to promote GHG emission reductions and removals in Japan by 2030 that are cost-efficient and enhance corporate social responsibility activities and voluntary carbon offsetting. During the review, Japan presented details of the scheme. The scheme is voluntary and requires interested companies to register their participation with the central government. Credits resulting from emission reductions are certified by a steering committee and can be used for achieving commitments under voluntary action plans (see para. 50 below), the Act on Promotion of Global Warming Countermeasures or the Energy Efficiency Act (Joint Energy Efficiency Projects). As at January 2018, 235 projects had been registered, representing an estimated emission reduction of 7,900 kt CO_2 eq in 2030, and the actual certified credits issued amounted to 2,900 kt CO_2 eq. There are two ways to trade the credits: over the counter (price is not known) and via auctions held several times a year. The most recent auction, held in April 2018, had trading prices of USD 11–13 per t CO_2 eq and about USD 15 for renewable energy credits.

26. The **tax for climate change mitigation** was introduced in 2012 as a levy on all fossil fuels with the revenue being used for mitigation actions addressing energy-related CO_2 emissions, such as promoting renewable energy and improving energy efficiency. The rate increased gradually over three and a half years after introduction of the tax and has reached JPY 289 per t CO_2 (USD 2.6 per t CO_2). The tax revenue increased accordingly to reach about JPY 260 billion per year.

27. The **Low Carbon Society Establishment Finance Initiative** was launched by the Government in 2013 to mobilize additional private finance for domestic climate action. The initiative has three components: an investment fund for promoting local low-carbon investments (JPY 4.8 billion), an interest subsidy for expanding environmental finance (JPY 1.6 billion) and an eco-lease promotion programme (JPY 1.9 billion).

28. Japan has promoted the issuance of **green bonds** by companies, local governments and financial institutions since 2014 with a view to attracting private funds for investment in green projects related to renewable energy, the improvement of the energy efficiency of buildings, and so forth. The results are encouraging: in 2017, bonds were issued for more than JPY 160 billion (which is more than five times the amount issued in 2014). The Government of Japan intends to further promote the green bonds market across Japan.

29. The **mandatory GHG accounting, reporting and disclosure programme** aims to support voluntary action by businesses and the general public. For energy-related CO_2 reporting, the reporting framework of the Energy Savings Act serves as the legal basis for the programme. Even though the impact from this programme is not assessed, it is an important part of Japan's portfolio of PaMs because in 2014 it already covered about half of the total GHG emissions and it has helped to raise the awareness of businesses and other stakeholders about the scale of emissions, the associated risk to competitiveness, and options and opportunities to reduce emissions. Table 4 provides a summary of the reported information on the PaMs of Japan.

Table 4
Summary of information on policies and measures reported by Japan

Sector	*Key PaMs*	*Estimate of mitigation impact by 2020 (kt CO_2 eq)*	*Estimate of mitigation impact by 2030 (kt CO_2 eq)*
Policy framework and cross-sectoral measures	Plan for Global Warming Countermeasures	–	–
	J-Credit Scheme	3 210	6 510
	Special tax for climate change mitigation	–	6 190[a]
Energy			
Transport	Diffusion of next-generation vehicles and improvement of fuel efficiency	7 025	23 790
Renewable energy	Maximum introduction of renewable energy – expanded use of electricity generated by renewable energy	–	156 160 to 165 990
	Maximum introduction of renewable energy – expanded use of heat generated by renewable energy	–	36 180
Energy efficiency	Introduction of highly energy-efficient equipment and devices		
	Industrial sector	42 325[b]	71 017
	Commercial and other sector	9 086[c]	11 484
	Residential sector	9 389[d]	15 279
	Thermal power generation	7 000[e]	11 000
IPPU	Measures related to F-gases	17 900[f]	47 000
Agriculture	Measures for reduction of CH_4 emissions associated with rice cultivation	330 to 920	640 to 2 430
	Measures for sinks in agricultural soils	7 080 to 8 280	6 960 to 8 900
LULUCF	Strategies for forest sinks	38 000	27 800
Waste	Advancement of combustion in sewage sludge incineration facilities	500	780

Note: The estimates of mitigation impact are estimates of emissions of CO_2 or CO_2 eq avoided in a given year as a result of the implementation of mitigation actions.

[a] Estimate by the ERT on the basis of the information provided during the review that the estimated CO_2 reduction effect of the tax is a 4.4 per cent reduction in emissions in 2030 compared with the 2013 level. The ERT used 2013 net emissions, excluding LULUCF and indirect CO_2 emissions.

[b] Estimates by the ERT, calculated as the sum of the mitigation impact of all individual activities included in "Promotion of introduction of highly energy-efficient equipment and devices for all the industrial sectors and cross industrial" in CTF table 3.

[c] Estimates by the ERT, calculated as the sum of the mitigation impact of all individual activities included in "Diffusion of highly energy-efficient equipment and devices (commercial and other sector)" in CTF table 3.

[d] Estimates by the ERT, calculated as the sum of the mitigation impact of all individual activities included in "Diffusion of highly energy-efficient equipment and devices (residential sector)" in CTF table 3.

[e] Impact of mitigation activity from "Persuasion of high efficiency in thermal power generation" included in "Reduction of CO_2 emission intensity in the power sector".

[f] Estimates by the ERT, calculated as the sum of the mitigation impact of all legal instruments aimed at reducing F-gases (excluding the impact of voluntary initiatives in industry).

30. Japan presented information on its PaMs by gas, subdivided by sector.

(b) Policies and measures in the energy sector

31. **Energy supply**. Energy production and consumption accounted for 88.4 per cent of the total GHG emissions in 2016 or 1,154 Mt CO_2 eq. This was an increase of 5.9 per cent compared with the 1990 level and a decrease of 5.9 per cent compared with the 2005 level. Fuel combustion by the energy industries accounted for 44.2 per cent of total CO_2 emissions (excluding LULUCF) in 2016. According to the BR3, the main primary energy sources are petroleum (41.0 per cent), coal (25.9 per cent) and LNG (24.3 per cent). In 2015, 43.0 per cent of the final energy consumption was in the industrial sector (including non-energy use), 32.0 per cent was in the residential and commercial sector and 23.0 per cent was in the transport sector.

32. Japan's energy policy is designed to achieve safety, energy security, economic efficiency, environmental objectives and relevant policy targets. The policy is implemented through Strategic Energy Plans, reviewed at least every three years. The plans in recent years have been based on two pillars: increasing energy efficiency (and reducing final energy demand); and reducing emissions from the energy supply sector. These pillars are supported by PaMs that aim to reduce CO_2 emission intensity through the introduction of new RES, the use of nuclear power from existing plants that have been reviewed as safe to resume operation by the Nuclear Regulation Authority (see para. 33 below) and the setting of power generation efficiency standards for new fossil fuel powered plants. During the review, the Party presented the main elements of its 2018 Strategic Energy Plan, showing that Japan aims to achieve a power generation mix for 2030 that comprises 22–24 per cent RES, 20–22 per cent nuclear, 27 per cent LNG, 26 per cent coal and 3 per cent petroleum. These shares are based on the assumption that Japan will achieve a reduction in energy demand of 17 per cent in 2030 compared with the 2013 level.

33. In 2015, the electricity industry voluntarily agreed to achieve an emission factor of 0.37 kg CO_2/kWh for power generation, corresponding with the national energy mix agreed in the 2015 Strategic Energy Plan and with the NDC. The measures in place to achieve this emission factor are monitored and evaluated annually and will be revised if it becomes clear that with such measures the goal of 0.37 kg CO_2/kWh is not achievable. During the review, Japan informed the ERT that the emission factor was 0.53 kg CO_2/kWh for 2015 and 0.52 kg CO_2/kWh for 2016. The further improvement of the power generation efficiency of coal-fired thermal power by 6.7 per cent, the introduction of CCS (see para. 34 below) and the pace of reconnection of nuclear power plants to the grid will largely affect the emission factor. During the review, Japan informed the ERT that safety standards for nuclear power plants were revised after the GEJE. Plants that meet the standards can restart operations. As at April 2018, the contribution of nuclear power remained minimal; only seven plants had met the standards and restarted operation. The number of plants in operation is increasing every year, although the public's trust in their safety still needs to be regained. During the review, Japan further explained that it believes that the restart of nuclear power plants will not impact the diffusion rate of renewable energy.

34. During the review, Japan presented its policies for new technologies. The possibility of the practical use of CCS technologies by 2020 is envisaged. Potential storage sites – including offshore sites – have been identified and the necessary PaMs will be considered in the near future. Japan considers that the low carbon price (introduced through the tax for climate change mitigation (see para. 26 above)) is the main barrier for CCS and that the introduction of a carbon market or regulatory measures might be necessary for the technology to be taken up. CCS will allow Japan to increase its coal-fired power capacity in accordance with the Strategic Energy Plans while still working towards the achievement of its 2030 GHG emission reduction target. Japan already has coal-fired plants producing 45 GW in operation, and the Party informed the ERT that the construction of plants for an additional 10 GW capacity is in the pipeline. The ERT noted that if these plants are constructed and put into operation, they may offset the gains from RES and lead to a substantial increase in emissions, an increased risk in lock-in carbon-intensive infrastructure, and underachievement of the NDC. During the review, Japan explained that a regulatory framework based on the Act on the Rational Use of Energy and the Sophisticated Methods of Energy Supply Structures has

been introduced for utilizing coal-fired power and that the energy mix and CO_2 emission reduction target for 2030 will be achieved through these efforts.

35. **Renewable energy sources**. Since the GEJE in 2011, Japan has shifted the focus of its energy policy and geared its efforts towards increasing the share of renewable energy capacity for both power and heat generation. This has resulted in a 15 per cent share of RES (including hydropower that was in operation before the GEJE) in the overall power generation in 2016 compared with 10 per cent in 2012. The main technology promoted is solar PV, with wind, geothermal, hydro and biomass also promoted but to a lesser extent. As mentioned in paragraph 32 above, Japan aims for a 22–24 per cent share of renewable energy in its power generation mix by 2030. In absolute terms, this means 236.6–251.5 TWh electricity generated from RES, including 40 per cent from hydropower, 30 per cent from solar PV, 18 per cent from biomass, 7 per cent from wind and about 5 per cent from geothermal.

36. Japan promotes renewable energy generation and use while considering issues such as reliable supply, cost and environmental aspects. The introduction of a feed-in tariff scheme in 2012 boosted renewable energy, with capacity increasing at an annual rate of 26 per cent. Most of this increase was realized by the deployment of solar PV, which increased by 170 per cent between 2012 and 2016. The feed-in tariff scheme was the successor of the Surplus Electricity Purchasing Scheme introduced in 2009, which in turn replaced the Renewable Portfolio Standards scheme introduced in 2003.

37. During the review, Japan informed the ERT of the main challenges encountered regarding renewable energy deployment, namely, the relatively high cost of renewable energy generation (compared with that in other countries), finding a sustainable balance in RES technologies (until 2016, solar PV accounted for almost 95 per cent of the additional installed RES capacity) and constraints related to grid access and capacity. To reduce costs for RES deployment, Japan introduced in 2017 an auction for solar PV above 2 MW, sets forward-looking price targets (e.g. a midterm price target) and promotes cost reduction through technological advances (including support of research and development). A number of barriers unrelated to cost, for example location constraints, also prevent Japan from realizing the proven renewable energy potential of technologies other than solar PV, in particular wind. Japan tries to expand renewable energy production close to the areas of energy demand to avoid grid constraint. It sees doing so also as a means to revitalize local economies and create jobs locally, thereby reducing rural depopulation.

38. Japan provided additional information during the review on its promotion of hydrogen energy based on renewable energy. Renewable energy hydrogen stations and fuel cell buses, forklifts and garbage trucks have already been introduced on a pilot scale.

39. **Energy efficiency**. PaMs targeting the improvement of energy efficiency have by far the largest total combined GHG emission reduction potential in Japan. The Act on the Rational Use of Energy, which entered into force in 1979, aims at ensuring the effective utilization of fuel resources and thus increasing energy security. The Act has been amended several times with a view to enhancing energy efficiency in various sectors. It specifies a framework under which business operators with overall annual energy consumption (head offices, manufacturing plants, branch offices, sales offices, etc.) of at least 1,500 kl are required to measure and report their energy consumption to the Government annually. In 1998, under a revision of the Act, the Top Runner Programme was created. This programme sets energy efficiency standards for household appliances, equipment and building materials based on models with the highest efficiency in each category. The energy efficiency standards for large buildings became mandatory in 2015. In its Fourth Strategic Energy Plan approved in 2014 Japan set an ambitious goal of net zero energy consumption as standard for new constructed buildings by 2030 (see para. 44 below).

40. During the review, Japan presented an overview of the energy efficiency improvements it has achieved, expressed in terms of final energy consumption over real GDP and with an emphasis on the period 1970–1990, when its achievements were most significant. In the following 20 years, the rate of improvement has slowed down; however, Japan is aiming for a 35 per cent improvement in final energy consumption efficiency in 2030 compared with the 2012 level.

41. Japan promotes energy efficiency improvement in all sectors through a diverse portfolio of instruments tailored to each: voluntary agreements with the industrial and power sectors; subsidies for the introduction of highly energy-efficient technologies in the industrial, commercial and other, residential, and transport (all modes) sectors; and standards for automobiles and household electrical appliances (under the Top Runner Programme) in the transport and residential sectors. Japan also uses taxation, awareness-raising and the promotion of innovation and technology development across all sectors. Existing energy efficiency and conservation measures are expected to reduce final energy demand by 13 per cent in 2030 compared with the WOM scenario.

42. Estimates for the mitigation impact of the deployment of highly energy-efficient equipment and devices in final demand sectors as well as strict standards for buildings clearly show the significant contribution these measures will have to the achievement of Japan's emission reduction targets for 2020 and 2030.

43. **Residential and commercial sectors**. These sectors accounted for 10.1 per cent of the total energy-related CO_2 emissions from energy consumption in 2016. Inventory data for 2016 show a decrease in these emissions of 33 per cent compared with the 2005 level and 15.6 per cent compared with the 1990 level. The emission decrease is mainly due to a decrease in the population and an associated decrease in the number of households, and the effect of energy efficiency measures. During the review, Japan highlighted that a major improvement in energy efficiency in the buildings sector is envisaged as the energy consumption of this sector comprised one third of the total final energy consumption in 2013, which was the second largest contribution after the industrial sector.

44. While the Top Runner Programme for household appliances, equipment and building materials (see para. 39 above) remains central for the residential sector, Japan aims to further reduce energy consumption in both the residential and commercial sectors through the promotion of low-carbon buildings and the accelerated introduction of net zero energy buildings and houses. These buildings are more energy-efficient than the standard and satisfy their remaining energy demand through solar PV power generation. During the review, Japan presented details on this policy, aimed at improving the energy standards of houses and buildings. Compliance with energy efficiency standards will gradually become mandatory for newly constructed housing and buildings by 2020. The aim is for more than half of newly constructed custom-built detached houses constructed by housing manufacturers to be net zero energy houses by 2020. Net zero energy houses should become standard for new residential construction by 2030. More than 42,000 net zero energy houses were built in 2017. Newly constructed public buildings aim to be net zero energy by 2020, while for newly constructed buildings the aim is to achieve net zero energy as standard by 2030. The national Government supported the introduction of 40 or more net zero energy buildings by local governments and private sector companies in 2017. Japan also provided the ERT with analyses of the health benefits and cost savings of net zero energy houses.

45. Other PaMs targeting the energy efficiency of buildings include the introduction of energy management systems for homes and buildings, which make energy consumption visible to the consumer, and the development of low-carbon cities through, among other things, the improvement of the thermal environment (e.g. prevention of heat island effects) and the promotion of LEDs for street and security lighting. During the review, Japan presented the CO_2 reduction potential diagnostic project, an audit programme aimed at identifying additional emission reduction potential. The results so far show a 10 per cent or more emission reduction in factory and office buildings. The potential is greater in small and medium-sized facilities. The Party also provided detailed information, including installation costs, pay-back periods and energy savings that can be realized, on examples of further identified measures. Lastly, raising public awareness on how to reduce energy consumption is also an important instrument.

46. **Transport sector**. The transport sector was responsible for 16 per cent of total GHG emissions in Japan in 2016. The trend for this sector is slightly downward since 2000, which is different from most other industrialized countries. In 2016, GHG emissions were 1.7 per cent higher than in 1990, while they were 13.3 per cent lower than in 2005. Several factors explain the downward trend since 2005, including improved fuel efficiency of cars, a modal shift in transport, reduced traffic volume and further improvement in public transportation.

47. Japan has a comprehensive approach to reducing emissions from the transport sector. The main focus is on: the improvement of fuel efficiency of cars; the promotion of modal shifts to more environmentally friendly modes and to combined transportation of goods; the increased use of public transport and cycling; the improvement of traffic flows by the promotion of autonomous vehicles; and the promotion of intelligent transport systems (e.g. centrally controlled signals).

48. Japan is a global car manufacturer and sets stringent fuel efficiency standards that affect not only its domestic car fleet but also the exported fleet. These standards have evolved from the 13.6 km/litre fuel set in 2010 to the 20.3 km/litre fuel set to be achieved in 2020. The fuel efficiency value in 2016 stood at 21.9 km/litre fuel; Japan is thus clearly on the way to overachieving the target for 2020. Japan is also among the world leaders in promoting hybrid and hydrogen-powered vehicles. The Government provides subsidies and infrastructure support and has set an ambitious vision of a "hydrogen society". Biofuel use is very limited, and biofuels need to be imported.

49. **Industrial sector**. The industrial sector accounted for 21.4 per cent of the total energy-related GHG emissions in 2016. These emissions were 17 per cent lower in 2016 compared with the 2005 level and 20.6 per cent lower compared with the 1990 level. Energy consumption by the industrial sector in 2013 accounted for 43 per cent of the total energy consumption, which was a 12.5 per cent decrease compared with the 1990 level according to data provided by Japan during the review. The energy and emission decreases are mainly due to a reduction in economic activity in this sector.

50. Together with Keidanren (the Japanese Business Federation) the Government of Japan promotes and enhances the uptake of voluntary action plans. These plans complement the promotion of energy efficiency measures (see para. 41 above) and are supported by four pillars: (1) emission reduction targets (for 2020 and 2030) for domestic business operations; (2) contribution to emission reductions in other sectors through the development and diffusion of low-carbon products; (3) contribution at the international level through technology transfer; and (4) development and introduction of innovative technologies. The emission reduction targets set on a voluntary basis under the first pillar are expressed by various indicators chosen by each industry (e.g. CO_2 emissions, CO_2 emission intensity, energy consumption, energy intensity), in accordance with industry-specific characteristics and the potential for new technology uptake. In 2015, 94 major associations in the industrial sector and 17 associations in the transport sector had action plans. Together, these plans reduced CO_2 emissions by 4.7 per cent in 2015 compared with the 2013 level.

51. During the review, Japan informed the ERT of the new Science Based Targets initiative, which is aimed at enhancing Japanese industry's ambition level to bring it in line with the IPCC 2 °C scenario. MOE supports the setting of company-specific targets under this initiative. At present, 58 companies are engaged in the initiative and 20 of them have adopted a target. Even though such engagement concerns mainly business-to-consumer businesses, which have fewer emissions, the initiative is considered a source of inspiration and a role model for other businesses.

(c) Policies and measures in other sectors

52. **Industrial processes**. Industrial process emissions amounted to 95,855.97 kt CO_2 eq in 2016 and accounted for 7.3 per cent of Japan's total GHG emissions (excluding LULUCF) in that year. F-gas emissions accounted for 50.9 per cent of the total emissions from industrial processes, followed by CO_2 process emissions by the mineral industry, with a 35.0 per cent share, and the GHG emissions by chemical and metal industries, with almost equal shares of 6.2 per cent and 6.4 per cent, respectively. Industrial process emissions were 13.2 per cent lower in 2016 than in 1990 but were 10.5 per cent above the level of 2005 emissions; the increase was mainly due to the increase in HFC emissions.

53. HFC emissions are the focus of mitigation efforts in this sector given that their share in total GHG emissions is high and growing, owing to their increased use in applications, mainly the replacement, since 2000, of chlorofluorocarbons and hydrochlorofluorocarbons controlled by the Montreal Protocol. Such control requires immediate action on the reduction of stock F-gases in the market, by converting to low-GWP HFCs and/or HFC replacements.

PaMs addressing F-gas emissions include the replacement of fluorocarbons by natural refrigerants, the prevention of leakage from equipment and the promotion of recovery. The total effect of these measures is estimated to be 18,500 kt CO_2 eq in 2020 and 48,200 kt CO_2 eq in 2030. During the review, Japan clarified that the phase-down schedule for HFCs required by the Kigali Amendment to the Montreal Protocol will not have a direct impact on the 2020 ambition level of these PaMs because they are already in place.

54. Japan reported on the promotion of the use of blended cement, expected to have impacts of 44 kt CO_2 eq in 2020 and 388 kt CO_2 eq in 2030.

55. **Agriculture**. Emissions from the agriculture sector were 33,505.37 kt CO_2 eq in 2016 and accounted for only 2.6 per cent of Japan's total GHG emissions. The emissions from this sector have decreased by 10.9 per cent since 1990 and by 4.8 per cent since 2005. The main PaMs include the promotion of: the application of compost in paddy fields as an alternative to ploughing in rice straw with a view to reducing CH_4 emissions; and improved application techniques for chemical fertilizers with a view to reducing N_2O emissions from soils. The total mitigation impact of these measures is estimated to be in the range of 400–990 kt CO_2 eq in 2020 and 740–2,530 kt CO_2 eq in 2030, depending, among other factors, on temperature.

56. Japan also promotes carbon storage in cropland and grassland soils by promoting the incorporation of organic matter such as compost and green manure. The estimated mitigation effect is in the range of 7,080–8,280 kt CO_2 eq in 2020 and 6,960–8,900 kt CO_2 eq in 2030.

57. **LULUCF**. Japan's LULUCF sector is a net sink, but the trend has been decreasing since 2003 mainly owing to the changes in the age composition of the country's forests. Net removals were 56,771.18 kt CO_2 eq in 2016, which was a 9.1 per cent decrease since 1990 and a 37.8 per cent decrease since 2005.

58. Japan relies heavily on the LULUCF sector to achieve its 2020 and 2030 emission reduction targets. The impact of the forest sink activities it has elected (afforestation, reforestation, deforestation and forest management) are estimated on a gross-net basis compared with 1990, while the elected activities cropland management, grazing land management and revegetation are estimated on a net-net basis compared with 1990. Japan estimates, using activity-based accounting, net removals by forest carbon sinks to be approximately 38,000 kt CO_2 eq in 2020 and 27,800 kt CO_2 eq in 2030. Japan furthermore promotes urban greening (e.g. building parks in cities, increasing green areas around roads and harbours), with an estimated effect of net removals of 1,190 kt CO_2 eq in 2020 and 1,240 kt CO_2 eq in 2030. Accounted net removals by agricultural soils are estimated to amount to between 7,080 and 8,280 kt CO_2 eq in 2020.

59. **Waste management**. Emissions from the waste sector amounted to 21,639.74 kt CO_2 eq in 2016 and accounted for 1.7 per cent of Japan's total GHG emissions. These emissions have decreased by 26.0 per cent since 1990 and by 19.9 per cent since 2005, mainly owing to the decrease in CH_4 emissions from solid waste disposal on land. The most important sources of emissions in this sector in 2016 were CO_2 emissions from waste incineration (64.0 per cent), CH_4 emissions from solid waste disposal (15.0 per cent) and CH_4 and N_2O emissions from wastewater treatment and discharge (15.9 per cent).

60. During the review, Japan explained to the ERT that the key to the success of its waste management policy lies in: (1) further targeted reduction of the waste volume through taxation; (2) economic incentives and regulation that aim at introducing biomass plastics; and (3) the promotion of recycling and reuse in order to reduce the amount of waste to be incinerated or disposed of in landfills (in the case of organic waste). Local governments play an important role in recycling efforts.

61. Japan also aims to improve the power generation efficiency of waste incineration plants (from 19 per cent in 2018 to 21 per cent in 2022) and to increase the share of municipal waste treated in incineration plants with power generation facilities in the total amount of waste incinerated (from 66 per cent in 2012 to 69 per cent in 2020). Furthermore, it is working on reducing N_2O emissions from wastewater sludge incineration systems by supporting the upgrade of combustion technology. The total estimated mitigation effect of the PaMs for the

waste sector reported in the NC7 amounts to 1,730 kt CO_2 eq in 2020 and 3,860 kt CO_2 eq in 2030.

(d) Response measures

62. Japan reported on the assessment of the economic and social consequences of response measures in the NC7 but did not include this information in the BR3. The information reported in the NC7 includes several initiatives aimed at minimizing adverse impacts, such as ACE 2.0, technical assistance in the energy and environmental sectors and development of CCS technologies.

(e) Assessment of adherence to the reporting guidelines

63. The ERT assessed the information reported in the BR3 of Japan and identified issues relating to completeness and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 5.

Table 5
Findings on the mitigation actions and their effects from the review of the third biennial report of Japan

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 7 Issue type: completeness Assessment: recommendation	In its BR3, Japan reported on the progress management of its Plan for Global Warming Countermeasures, but it did not indicate what the changes are in its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress towards its economy-wide emission reduction target. During the review, Japan clarified that the change is the progress management described in its BR3 as it is related to the Plan for Global Warming Countermeasures. This institutional arrangement did not exist at the time of preparation of the BR2 (submitted in December 2015) since the Plan for Global Warming Countermeasures was developed in May 2016. The ERT reiterates the recommendation made in the previous review report that Japan in its next BR include information on changes in its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress towards its economy-wide emission reduction target.
2	Reporting requirement specified in CTF table 3 Issue type: completeness Assessment: recommendation	In CTF table 3 of its BR3, Japan reported estimates of mitigation impact in 2030 for most PaMs. It did not, however, estimate the mitigation impact in 2020 for all PaMs, such as those related to renewable energy production, potentially leading to important emission reductions. During the review, Japan explained that, in general, the reduction effect in 2020 was established only as a guide for checking progress towards the 2030 target, which is the time frame for the national Plan for Global Warming Countermeasures. For some PaMs, the estimation of reduction impact in 2020 is difficult. The ERT recommends that Japan include in its next BR estimates of mitigation impact (not cumulative) in 2020 for all the mitigation actions listed in CTF table 3 or an explanation as to why this may not be possible due to Japan's national circumstances.
3	Reporting requirement specified in paragraph 8 Issue type: completeness	Japan reported on the assessment of the economic and social consequences of response measures in its NC7 but did not include this information in its BR3. During the review, Japan clarified that it will include this information in its next BR.

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
	Assessment: encouragement	The ERT encourages Japan to include in its next BR detailed information on the assessment of the economic and social consequences of response measures.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

2. Estimates of emission reductions and removals and the use of units from market-based mechanisms and land use, land-use change and forestry

(a) Technical assessment of the reported information

64. In its BR3, Japan included indirect CO_2 emissions in its national total GHG emissions and in CTF table 4, where Japan reported progress, emissions are therefore presented excluding LULUCF but including indirect CO_2 emissions. Japan reported in CTF table 4 annual total GHG emissions excluding LULUCF of 1,364,040.64 kt CO_2 eq in 2014, which is 2.5 per cent below the 2005 base-year level, and 1,324,717.74 kt CO_2 eq, in 2015, which is 5.3 per cent below the 2005 base-year level. The ERT noted that when Japan submitted its pledge under the Cancun Agreements it did not include indirect CO_2 emissions in its assessment of emissions for the base year (2005) and target year (2020).

65. Japan reported in CTF tables 4 and 4(a) that in 2014 and 2015 it did not use units from market-based mechanisms to offset GHG emissions but used a contribution from LULUCF activities to offset GHG emissions. Japan intends to use the contribution of LULUCF, accounted using an activity-based approach, to achieve its 2020 target, in addition to units from market-based mechanisms under the Convention. In 2016, the Government of Japan acquired 0.36 kt CO_2 eq units from JCM and, so far, these units have not been used. Table 6 illustrates Japan's total GHG emissions, the contribution of LULUCF and the use of units from market-based mechanisms to achieve its target.

Table 6
Summary of information on the use of units from market-based mechanisms and land use, land-use change and forestry by Japan to achieve its target

Year	*Emissions excluding LULUCF (kt CO_2 eq)*[a]	*Contribution of LULUCF (kt CO_2 eq)*[b]	*Emissions including contribution of LULUCF (kt CO_2 eq)*	*Use of units from market-based mechanisms (kt CO_2 eq)*
1990	1 273 560.52	NA	NA	NA
2005[c]	1 398 823.62	NA	NA	NA
2010	1 306 045.28	NA	NA	NA
2011	1 355 578.63	NA	NA	NA
2012	1 391 203.02	NA	NA	NA
2013	1 409 037.65	–60 431.22	1 348 606.43	NA
2014	1 364 040.64	–59 487.29	1 304 553.35	NA
2015	1 324 717.74	–57 624.95	1 267 092.79	NA

Sources: Japan's BR3 and CTF tables 1, 4, 4(a)I, 4(a)II and 4(b).

[a] Emissions include indirect CO_2.

[b] Japan calculates the contribution of LULUCF using an activity-based accounting method with 1990 as the base year. These data are therefore different from the data included in the inventory.

[c] Emissions and removals are reported for a base year, if a year other than 1990 is used as the base year.

66. In assessing the progress towards the achievement of the 2020 target, the ERT noted that Japan's emission reduction target under the Convention is 3.8 per cent or more below the 2005 level. As discussed above, in 2015 Japan's annual total GHG emissions excluding LULUCF were 5.3 per cent (74,105.88 kt CO_2 eq) below the base-year level. In addition, the

ERT noted that in 2015 the contribution of LULUCF (following an activity-based approach) was 57,624.95 kt CO_2 eq. If inventory data are used, which include LULUCF accounted for with a land-based approach, the emissions in 2015 were 3.3 per cent below the 2005 level. Japan intends to use JCM credits for the achievement of its 2020 target.

67. The ERT noted that Japan is making progress towards its emission reduction target by implementing mitigation actions that are delivering some emission reductions. To achieve its target, Japan plans to use removal units from LULUCF activities, accounted following an activity-based approach, of 57–60 Mt, as shown in CTF table 4, as well as units from JCM at a scale as yet unknown. On the basis of the results of the projections (see para. 79 below), the ERT also noted that Japan is making progress towards its target under the Convention. Although it is making progress, Japan acknowledges that as well as the contribution of removals from LULUCF, additional mitigation measures or enhanced ambition of existing measures will be necessary to achieve its target. During the review, Japan pointed out that the reference "or more" in its target definition is intended to accommodate further emission reductions that will be realized if reconnection of nuclear power plants to the grid is achieved faster than initially planned.

(b) Assessment of adherence to the reporting guidelines

68. The ERT assessed the information reported in the BR3 of Japan and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 7.

Table 7
Findings on estimates of emission reductions and removals and the use of units from the market-based mechanisms and land use, land-use change and forestry from the review of the third biennial report of Japan

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation*
1	Reporting requirement specified in paragraph 9 Issue type: transparency Assessment: recommendation	In CTF table 4, Japan reported as "NA" and did not provide a detailed explanation of the emissions and/or removals from the LULUCF sector for the 2005 base year based on the accounting approach for LULUCF used for the target year 2020. During the review, Japan clarified that emissions and removals from forest-related activities (afforestation, reforestation, deforestation and forest management) are estimated on a gross-net basis compared with 1990, while cropland management, grazing land management and revegetation are estimated on a net-net basis compared with 1990. The ERT recommends that Japan include in its next BR information for the base year on: (1) emissions and/or removals from the LULUCF sector based on the accounting approach applied, taking into consideration any relevant decisions of the COP and the activities and/or lands that will be accounted for; and (2) total GHG emissions, including emissions and removals from the LULUCF sector, or provide an explanation why such information is not included.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

3. Projections overview, methodology and results

(a) Technical assessment of the reported information

69. Japan reported updated projections for 2020 and 2030 relative to actual inventory data for 2015 under the WEM scenario. The WEM scenario reported by Japan includes the full set of PaMs reported, all of which were implemented in 2016. Japan did not report a WAM or WOM scenario.

70. The projections are presented on a sectoral basis, using the same sectoral categories as those used in the reporting on mitigation actions, and on a gas-by-gas basis for CO_2, CH_4, N_2O, PFCs, HFCs and SF_6 (treating PFCs and HFCs collectively in each case) as well as NF_3 for 1990–2030. The ERT noted that Japan, when determining its target, has taken into

account the expected outcomes of concrete PaMs and individual technologies already in place for each sector. As a consequence, the target is closely linked to the projections of GHG emissions.

71. Japan's policy-oriented categorization of sectors (industrial, commercial, residential, transport and energy conversion) is well suited to providing an understanding of the relationship between policy outcomes and projected emissions in these sectors. This categorization is used for energy-related CO_2 emissions, which are by far the dominant contribution to total GHG emissions. For the other gases, Japan presents its projections by gas, not further subdividing them by sector. The projections are also provided in an aggregated format for each CRF category as well as for a Party total using GWP values from the AR4.

72. Japan did not report emission projections for indirect CO_2, as the projected values have not been estimated yet, or for other indirect GHGs such as carbon monoxide, nitrogen oxides, non-methane volatile organic compounds or sulfur oxides.

73. Emission projections related to fuel sold to ships and aircraft engaged in international transport were not reported separately and were not included in the totals.

(b) Methodology, assumptions and changes since the previous submission

74. The methodology used for the preparation of the projections is identical to that used for the preparation of the emission projections for the BR2. Japan reported supporting information explaining the methodology. For the projections of energy-related CO_2 emissions, Japan uses an energy supply and demand model; for the other projections, spreadsheet-based estimates are used. Although the energy supply and demand model has been used already for the projections reported in the BR2, information regarding this model was only reported in the NC7 and the BR3 in response to a recommendation from the BR2 review.

75. The energy supply and demand model consists of five submodels: a macroeconomic model for the projection of economic activities; an energy price model for simulating the prices on international energy markets; a model for optimum energy generation based on minimizing system costs; a model for bottom-up aggregation of energy efficiency measures; and a model for sectoral estimates of energy consumption and emissions. The model seems to be a promising tool to produce robust projections and show the effect of PaMs.

76. To prepare its projections, Japan relied on the following key underlying assumptions reported in CTF table 5: (1) the growth of real GDP in Japan is projected to be 19.2 per cent from 2010 to 2020 and 16.4 per cent from 2020 to 2030, resulting in annual growth rates of 1.8 per cent and 1.5 per cent, respectively, in these periods; (2) population is projected to decrease from 128.1 million in 2010 to 124.1 million in 2020, a decrease of 3.1 per cent, and to 116.6 million in 2030, a decrease of 6.0 per cent in relation to 2020; (3) the number of households is projected to decrease too, but at a slightly lower rate; and (4) the assumed industrial production volumes are a continuation of the historic trends for 2030 but are not provided for 2020.

77. Regarding sensitivity analyses of projections, Japan reported that it performed an analysis of substitution elasticities of the consumption of different energy sources, but not of other key drivers such as GDP growth and population changes.

(c) Results of projections

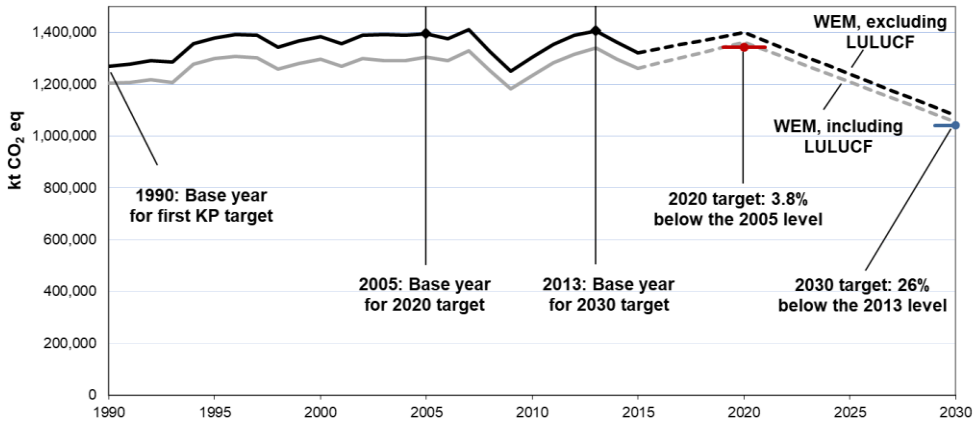
78. The projected emission levels under the WEM scenario and information on the quantified economy-wide emission reduction target are presented in table 8 and the figure below.

Table 8
Summary of greenhouse gas emission projections for Japan

	GHG emissions (kt CO_2 eq per year)	*Changes in relation to base-year[a] level (%)*	*Changes in relation to 1990 level (%)*
Quantified economy-wide emission reduction target under the Convention	1 343 443.15	–3.8	NA
Inventory data 1990[b]	1 268 259.45	NA	NA
Base year 2005[b]	1 396 510.55	NA	NA
Base year 2013[c]	1 406 855.02	NA	NA
Inventory data 2015[b]	1 322 567.81	–5.3	NA
WEM projections for 2020[b]	1 399 565.40	0.2	10.4
WEM projections for 2030[b]	1 079 500.00	–23.3	–14.9

[a] "Base year" in this column refers to the base year used for the target under the Convention.
[b] From Japan's BR3 CTF table 6.
[c] From Japan's BR3 CTF table 1s3.

Greenhouse gas emission projections reported by Japan



Sources: (1) data for the years 1990–2015: Japan's 2017 annual inventory submission, version 1; total GHG emissions excluding LULUCF and including LULUCF; (2) data for the years 2015–2030: Japan's NC7 and BR3; total GHG emissions excluding LULUCF and including LULUCF.

Notes: Solid black line, total GHG emissions excluding LULUCF for 1990–2015; solid grey line, total GHG emissions including LULUCF for 1990–2015; dashed black line, total GHG emissions excluding LULUCF for 2015–2020; dashed grey line, total GHG emissions including LULUCF for 2015–2030.

Abbreviation: KP = Kyoto Protocol.

79. Japan's total GHG emissions excluding LULUCF are projected to be 1,399,565.40 and 1,079,500.00 kt CO_2 eq in 2020 and 2030, respectively, under the WEM scenario, which is an increase of 10.4 per cent and a decrease of 14.9 per cent, respectively, relative to the 1990 level. When relating the 2020 projected emissions to 2005, the base year chosen by Japan for its quantified economy-wide emission reduction target in 2020, the projections amount to an increase of 0.2 per cent. When relating the projected emissions in 2030 to 2013, the base year chosen by Japan for its 2030 target and also the year of highest emissions in Japan to date, this decrease is 23.3 per cent. When including removals from the LULUCF sector in the target year (but not in the base year), projected emissions in 2020 and 2030 in relation to the base year (2005 and 2013, respectively) show a decrease of 2.4 per cent and of 25.1 per cent, respectively.

80. The 2020 projections suggest that Japan may face challenges in achieving its 2020 target under the Convention, and in addition to the contribution of removals from LULUCF, additional mitigation measures will be necessary to achieve it. During the review, Japan

explained that it does not intend to adopt additional measures but rather to strengthen the implementation of certain adopted PaMs. These include the reconnection of nuclear power plants to the grid, the further deployment of renewable energy, and overseas reduction through JCM.

81. Japan presented the WEM scenario by sector for 2020 and 2030, as summarized in table 9. Projections are by CRF category, and sector categorization for energy-related CO_2 emissions is not included.

Table 9
Summary of greenhouse gas emission projections for Japan presented by sector

	GHG emissions and removals (kt CO_2 eq)					*Change (%)*			
Sector	*1990*	*2005*	*2013*	*2020*	*2030*	*1990–2020*	*2005–2020*	*1990–2030*	*2013-2030*
Energy (not including transport)	887 029.05	1 009 693.34	1 043 479.14	1 053 578.32	784 200.00	18.8	4.3	–11.6	–24.8
Transport	204 245.55	235 977.66	217 760.26	194 840.61	165 500.00	–4.6	–17.4	–19.0	–24.0
Industry/industrial processes	110 451.48	84 728.60	88 922.17	93 001.43	74 800.00	–15.8	9.8	–32.3	–15.9
Agriculture	37 635.95	40 015.02	34 762.88	38 723.08	37 500.00	2.9	–3.2	–0.4	7.9
LULUCF	–63 455.06	–89 643.58	–67 477.22	–36 404.03	–25 900.00	–42.6	–59.4	–59.2	–61.6
Waste	28 897.43	26 095.94	21 930.57	19 321.96	17 300.00	–33.1	–26.0	–40.1	–21.1
Total GHG emissions without LULUCF	**1 268 259.45**	**1 396 510.55**	**1 406 855.02**	**1 399 565.40**	**1 079 500.00**	**10.4**	**0.2**	**–14.9**	**–23.3**

Source: Japan's BR3 CTF table 6. For 2013 GHG emission data: Japan's 2017 annual submission, version 1.

82. According to the projections reported for 2020 under the WEM scenario, the most significant emission reductions are expected to occur in the transport sector, amounting to projected reductions of 4.6 and 17.4 per cent compared with the 1990 and 2005 levels, respectively. This reflects the effects from the diffusion of next-generation hybrid and electric vehicles and a further modal shift to environmentally friendly transport modes. Emissions from the energy sector (excluding transport) are projected to increase by 18.8 and 4.3 per cent compared with the 1990 and 2005 levels, respectively, driven by growth in economic activity and related increases in industrial and commercial energy use and by increased emissions from coal-based electricity generation as a substitution of nuclear power resulting from the GEJE. Although comparatively small in absolute terms, the projected decrease of emissions in the waste sector by 33.1 and 26.0 per cent compared with the 1990 and 2005 levels, respectively, is a clear indication of the success of Japan's rigorous waste management policy, which is expected to result in further decreasing the amounts of incinerated waste, final disposal and treated wastewater. The sink capacity of the LULUCF sector is projected to decrease by 42.6 and 59.4 per cent compared with the 1990 and 2005 levels, respectively, mainly as a result of the age structure of forests in Japan.

83. The pattern of projected emissions reported for 2030 in relation to 1990 and 2013 (the base year for the NDC) changes considerably compared with the projections for 2020. Emissions from all sectors are expected to decrease considerably, with the exception of agriculture, where emissions are expected to decrease by 0.4 per cent and increase by 7.9 per cent compared with the 1990 and 2013 levels, respectively, and LULUCF, which is expected to show a decrease in its sink capacity by 59.2 and 61.6 per cent compared with the 1990 and 2013 levels, respectively. The dominant drivers of these reductions are: the increase in the shares of nuclear- and RES-based electricity generation; reduced consumption of fossil fuels in transport and for residential and commercial heating; and the increase in energy efficiency in energy consumption sectors.

84. Japan presented the WEM scenario by gas for 2020 and 2030, as summarized in table 10.

Table 10
Summary of greenhouse gas emission projections for Japan presented by gas

	GHG emissions and removals (kt CO_2 eq)					*Change (%)*			
Gas	*1990*	*2005*	*2013*	*2020*	*2030*	*1990–2020*	*2005–2020*	*1990–2030*	*2013–2030*
CO_2	1 157 164.51	1 304 375.96	1 313 686.01	1 298 375.21	997 800.00	12.2	–0.5	–13.8	–24.0
CH_4	44 223.07	38 962.32	32 675.28	33 932.91	31 600.00	–23.3	–12.9	–28.5	–3.3
N_2O	31 517.58	25 510.95	21 400.06	21 557.28	21 100.00	–31.6	–15.5	–33.1	–1.4
HFCs	15 932.31	12 724.24	32 094.56	38 300.00	21 600.00	140.4	201.0	35.6	–32.7
PFCs	6 539.30	8 623.35	3 280.06	4 000.00	4 200.00	–38.8	–53.6	–35.8	28.0
SF_6	12 850.07	5 063.86	2 101.81	2 400.00	2 700.00	–81.3	–52.6	–79.0	28.5
NF_3	32.61	1 249.87	1 617.24	1 000.00	500.00	2 966.5	–20.0	1 433.3	–69.1
Total GHG emissions without LULUCF	**1 268 259.45**	**1 396 510.55**	**1 406 855.02**	**1 399 565.40**	**1 079 500.00**	**10.4**	**0.2**	**–14.9**	**–23.3**

Source: Japan's BR3 CTF table 6. For 2013 GHG emission data: Japan's 2017 annual submission, version 1.

85. For 2020, CO_2 emissions are projected to increase by 12.2 per cent and decrease by 0.5 per cent compared with the 1990 and 2005 levels, respectively. CH_4 emissions are projected to decrease by 23.3 and 12.9 per cent in 2020 compared with the 1990 and 2005 levels, respectively, while N_2O emissions are projected to decrease by 32.1 and 15.5 per cent in 2020 compared with the 1990 and 2005 levels, respectively. HFC emissions, in contrast, are projected to increase considerably by 2020 (by 140.4 and 201.0 per cent compared with the 1990 and 2005 levels, respectively), leading to an overall increase in emissions of F-gases.

86. For 2030, CO_2 emissions are projected to decrease by 13.8 and 24.0 per cent compared with the 1990 and 2013 levels, respectively. CH_4 emissions are projected to decrease by 28.5 and 3.3 per cent by 2030 and N_2O emissions by 33.1 and 1.4 per cent compared with the 1990 and 2013 levels, respectively. Compared with 2020, the trend in HFC emissions turns by 2030 – emissions are projected to increase by 35.6 per cent and decrease by 32.7 per cent compared with the 1990 and 2013 levels, respectively.

(d) Assessment of adherence to the reporting guidelines

87. The ERT assessed the information reported in the BR3 of Japan and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 11.

Table 11
Findings on greenhouse gas emission projections reported in the third biennial report of Japan

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement[a] specified in paragraph 43 Issue type: transparency Assessment: encouragement	In its BR3, Japan did not describe all the models or approaches used in a way which allows the reader to obtain a basic understanding of them. Japan did not summarize the strengths and weaknesses of the models or approaches used and did not explain how the models or approaches used account for any overlaps or synergies that may exist between different PaMs. During the review, Japan provided further information on the methodologies used for the preparation of the emission projections. For instance, it explained the strengths and weaknesses of the models used and informed the ERT that a spreadsheet model was used to estimate non-CO_2 GHGs. With regard to the economic energy supply and demand model, the ERT noted that the transparency of the reporting would be enhanced by a clearer description of the interaction of the submodels. During the

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
		review, Japan explained the model in more detail; in particular, which parameters are assumed to be exogenous. To increase transparency, the ERT encourages Japan in its next BR to briefly describe each type of model or approach used and its characteristics, to summarize the strengths and weaknesses of the models or approaches used and to explain how the models or approaches used account for any overlaps or synergies that may exist between different PaMs.
2	Reporting requirement[a] specified in paragraph 36 Issue type: completeness Assessment: recommendation	In its BR3, Japan did not report emission projections related to fuel sold to ships and aircraft engaged in international transport separately and did not include them in the totals. During the review, Japan informed the ERT there were no estimates of future activity levels of international aviation and maritime transport, hence the projections could not be estimated. The ERT recommends that Japan report in its next BR, to the extent possible, emission projections related to fuel sold to ships and aircraft engaged in international transport separately and not included in the totals.
3	Reporting requirement[a] specified in paragraph 38 Issue type: completeness Assessment: encouragement	Japan did not provide diagrams illustrating the projections in accordance with paragraph 38 of the UNFCCC reporting guidelines on NCs. During the review, this issue was not discussed with Japan. The ERT encourages Japan to include in its next BR diagrams illustrating the projections in accordance with paragraph 38 of the UNFCCC reporting guidelines on NCs.
4	Reporting requirement[a] specified in paragraph 28 Issue type: transparency Assessment: encouragement	In the BR3, Japan reported that in order to reach its emission reduction target of 3.8 per cent or more in 2020, in addition to removals from LULUCF, it intends to implement additional mitigation measures. Japan did not, however, specify any measures and did not report a WAM scenario. During the review, Japan explained that it does not intend to adopt additional PaMs in order to meet the target but instead will enhance the implementation of existing PaMs. The ERT encourages Japan to include in its next BR a WAM scenario, or to transparently explain, in line with the scenario definitions of Japan, why it chose not to develop a WAM scenario.

Note: The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on NCs and on BRs.

[a] Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on NCs.

D. Provision of financial, technological and capacity-building support to developing country Parties

1. Approach and methodologies used to track support provided to non-Annex I Parties

(a) Technical assessment of the reported information

88. In the BR3 Japan reported information on the provision of financial, technological and capacity-building support required under the Convention.

89. Japan provided details on what "new and additional" support it has provided and clarified how this support is "new and additional". Japan reported on the financial resources it provided in 2015–2016, indicating in the BR3 that all reported climate finance was "new and additional". Climate finance is newly committed or disbursed by the National Diet on an annual basis and is therefore considered to be "new". Moreover, the reported finance does not include previously committed or disbursed climate finance and is therefore considered to

be “additional”. The approach to the reporting of “new and additional” resources has not changed since Japan’s BR2.

90. Japan reported the financial support that it has provided to non-Annex I Parties, distinguishing between support for mitigation, adaptation and cross-cutting activities, and recognizing the capacity-building elements of such support. The BR3 includes information on the national approach to tracking the provision of support, indicators, delivery mechanisms used and allocation channels tracked. Japan reported that MOFA develops and distributes to relevant government ministries and institutions a list of sample projects that contribute to climate change mitigation and adaptation, using the Rio Markers as reference material. Each ministry and institution uses the list to determine its climate finance support, and then sends the information to MOFA for compilation. In response to questions from the ERT during the review, Japan acknowledged that each ministry and institution may use slightly different methods of judgment to determine climate finance projects but explained that MOFA conducts a quality assurance check on information related to support. Japan clarified that its approach to tracking support has not changed since its BR2.

91. Japan described the methodology and underlying assumptions used for collecting and reporting information on financial support. Specifically, the Party reported that climate-specific finance is defined as finance that supports climate change mitigation and adaptation measures, as illustrated by a list of example projects drawn from the Rio Markers. In response to a question from the ERT during the review, Japan explained that it does not use ratios in determining which components of a project represent climate finance; instead, it counts total project values at 100 per cent climate finance. During the review, the Party clarified that it counts certain coal and natural gas projects as climate finance, on the basis of its assessment of whether the project reduces GHG emissions compared with alternative projects.

(b) Assessment of adherence to the reporting guidelines

92. The ERT assessed the information reported in the BR3 of Japan and identified an issue relating to transparency and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 12.

Table 12
Findings on the approach and methodologies used to track support provided to non-Annex I Parties from the review of the third biennial report of Japan

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in paragraph 15	In its BR3, Japan reported the general approach it used to determine climate-specific support provided, but did not describe the methodology itself, such as the types of projects that are considered to be climate related.
	Issue type: transparency Assessment: recommendation	During the review, in response to a question from the ERT, Japan explained that it does not use coefficients when determining whether a project is climate finance; rather, it counts total project values as 100 per cent climate finance. Japan also clarified that it counts certain coal and natural gas projects as climate finance, on the basis of its assessment of whether the project reduces GHG emissions compared with other projects.
		The ERT recommends that Japan enhance the transparency of its reporting by including in its next BR detailed information on the methodology used to determine climate-specific support provided. The ERT noted that this could include a sample list of projects that contribute to climate change that is distributed to relevant ministries and institutions to determine climate finance.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

2. Financial resources

(a) Technical assessment of the reported information

93. Japan reported information on the provision of financial support required under the Convention and its Kyoto Protocol, including on financial support provided, committed and pledged, allocation channels and annual contributions.

94. Japan indicated what "new and additional" financial resources it provided in 2015–2016 and clarified how it determined such resources as being "new and additional". Japan stated in the BR3 that all reported climate finance was "new and additional". Climate finance is newly committed or disbursed by the National Diet on an annual basis and is therefore considered to be "new". Moreover, the reported finance does not include previously committed or disbursed climate finance and is therefore considered to be "additional".

95. Japan described how its resources address the adaptation and mitigation needs of non-Annex I Parties. It also described how those resources assist non-Annex I Parties to mitigate and adapt to the adverse effects of climate change and contribute to technology development and transfer and capacity-building related to mitigation and adaptation. The Party reported that it develops projects through close consultation with developing country Parties, taking into account their needs as conveyed to Japan's embassies and the overseas offices of JICA located in a number of developing countries. Japan reported information on the assistance that it has provided to developing country Parties that are particularly vulnerable to the adverse effects of climate change to help them to meet the costs of adaptation to those adverse effects. In particular, the Party provided information on its financial support totalling USD 44.1 million to Pacific islands that are particularly vulnerable to the adverse impacts of climate change.

96. With regard to the most recent financial contributions aimed at enhancing the implementation of the Convention by developing countries, Japan reported that its climate finance has been allocated to support ACE 2.0. ACE 2.0 is an initiative announced at COP 21 that commits Japan to providing JPY 1.3 trillion (approximately USD 12 billion using the exchange rate as at 1 June 2018) in climate finance in the year 2020. ACE 2.0 succeeds ACE, a JPY 1.6 trillion climate finance goal covering the period 2013–2015. Japan achieved the goal within one and a half years. In response to a question from the ERT during the review, Japan clarified that it is on track to achieve the JPY 1.3 trillion climate finance goal contained in ACE 2.0. The ERT noted that ACE 2.0 is a major contributor towards the USD 100 billion collective climate finance goal. Table 13 includes some of the information reported by Japan on its provision of financial support.

Table 13
Summary of information on provision of financial support by Japan in 2015–2016
(Millions of United States dollars)

	Year of disbursement	
Allocation channel of public financial support	*2015*	*2016*
Official development assistance[a]	22 050	23 799
Climate-specific contributions through multilateral channels, including:	126	188
GEF	NE	NE
LDCF	0	1
SCCF	0	0
Adaptation Fund	0	0
GCF	90	157
Trust Fund for Supplementary Activities	1	1
Other multilateral climate funds	26	25
United Nations bodies	6	4

Allocation channel of public financial support	*Year of disbursement*	
	2015	*2016*
Climate-specific contributions through bilateral, regional and other channels	8 838	10 698

[a] *Sources*: (1) Query Wizard for International Development Statistics, available at http://stats.oecd.org/qwids/; (2) BR3 CTF tables.

97. Japan reported on its climate-specific public financial support, totalling USD 8.96 billion in 2015 and USD 10.89 billion in 2016. These totals place Japan among the largest climate finance donors in the world. The Party reported that in 2015 and 2016, 434 projects were implemented in as many as 91 countries. During the reporting period, Japan placed a particular focus on mitigation, for which it allocated USD 21.13 billion. In addition, USD 1.9 billion support was provided for adaptation, USD 537 million for mitigation and adaptation, and USD 7.07 million for REDD-plus[5] projects. The ERT noted that support has grown from 2015 to 2016. Information on financial support from the public sector provided through multilateral and bilateral channels and the allocation of that support by priority is presented in table 14.

Table 14
Summary of information on channels of financial support used in 2015–2016 by Japan
(Millions of United States dollars)

Allocation channel of public financial support	*Year of disbursement*				*Share (%)*	
	2015	*2016*	*Difference*	*Change (%)*	*2015*	*2016*
Support through bilateral and multilateral channels allocated for:						
Mitigation	7 508	9 924	2 416	32.2	83.8	91.2
Adaptation	1 052	555	–497	–47.2	11.7	5.1
Cross-cutting	401	406	6	1.4	4.5	3.7
Other	0	0	–	–	–	–
Total	**8 961**	**10 886**	**1 925**	**21.5**	**100.0**	**100.0**
Detailed information by type of channel						
Multilateral channels						
Mitigation	22	22	0	0.0	18.3	11.9
Adaptation	1	2	1	108.2	0.6	0.8
Cross-cutting	99	164	65	65.1	81.1	87.3
Other	0	0	–	–	–	–
Total	**123**	**188**	**65**	**53.4**	**100.0**	**100.0**
Bilateral channels						
Mitigation	7 485	9 901	2 416	32.3	84.7	92.6
Adaptation	1 052	554	–498	–47.3	11.9	5.2
Cross-cutting	302	242	–59	–19.6	3.4	2.3
Other	0	0	–	–	–	–
Total	**8 838**	**10 698**	**1 859**	**21.0**	**100.0**	**100.0**
Multilateral compared with bilateral channels						

[5] In decision 1/CP.16, paragraph 70, the COP encouraged developing country Parties to contribute to mitigation actions in the forest sector by undertaking the following activities: reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks.

Allocation channel of public financial support	*Year of disbursement*				*Share (%)*	
	2015	*2016*	*Difference*	*Change (%)*	*2015*	*2016*
Multilateral	123	188	65	53.4	1.4	1.7
Bilateral	8 838	10 698	1 859	21.0	98.6	98.3
Total	**8 961**	**10 886**	**1 925**	**21.5**	**100.0**	**100.0**

Source: CTF tables 7, 7(a) and 7(b) of the BR3 of Japan.

98. The BR3 includes detailed information on the financial support provided though multilateral, bilateral and regional channels in 2015 and 2016. More specifically, Japan contributed through multilateral channels, as reported in the BR3 and in CTF table 7(a), USD 122.55 million and USD 188 million for 2015 and 2016, respectively. The contributions were made to specialized multilateral climate change funds, such as the GCF, the Asia Pacific Adaptation Network, the Asia-Pacific Network for Global Change Research and the LDCF. In its BR3, Japan amended the way it determines whether contributions through multilateral channels are "core/general" or "climate-specific", compared with its BR2. In response to a question from the ERT during the review, Japan explained that it is difficult to impute the climate finance provided to multilateral climate change funds that also implement non-climate activities, such as the GEF and the World Bank. The Party stated that it follows a conservative approach and classifies the overall funding for these types of institutions as "core/general" rather than "climate-specific". Japan does, however, identify those funds with a main objective of addressing climate change issues, such as the GCF, as "climate-specific".

99. The BR3 and CTF table 7(b) also include detailed information on the total financial support provided though bilateral and regional (USD 8.83 billion and USD 10.70 billion) channels in 2015 and 2016, respectively.

100. The BR3 provides information on the types of support provided. In terms of the focus of public financial support, as reported in CTF table 7 for 2015, the shares of the total public financial support allocated for mitigation, adaptation and cross-cutting projects were 83.8, 11.7 and 4.5 per cent, respectively. Furthermore, 1.4 per cent of the total public financial support was allocated through multilateral channels and 98.6 per cent through bilateral, regional and other channels. In 2016, the shares of the total public financial support allocated for mitigation, adaptation and cross-cutting projects were 91.2, 5.1 and 3.7 per cent, respectively. Furthermore, 1.7 per cent of the total public financial support was allocated through multilateral channels and 98.3 per cent through bilateral, regional and other channels.

101. The ERT noted that in 2015 and 2016, all financial contributions made through multilateral channels were allocated to cross-cutting projects. In 2015 and 2016, 0.45 per cent of financial contributions made through multilateral channels were allocated to adaptation, 14.4 per cent to mitigation and 85.15 per cent to cross-cutting projects.

102. CTF tables 7(a) and 7(b) include information on the types of financial instrument used in the provision of assistance to developing countries, which include grants, concessional loans, non-concessional loans and equity. The ERT noted that in 2015 and 2016, grants, concessional loans and non-concessional loans accounted for most of the total public financial support. During the review, Japan clarified that the following ministries provide most of Japan's climate-related official development assistance: MAFF, METI, MLIT, MOE, MOF and MOFA. JICA also provides much of this assistance. JBIC, in cooperation with the private sector, is the main implementing agency for projects classified as other official flows.

103. In the BR3, Japan reported on private financial flows leveraged by bilateral climate finance towards mitigation and adaptation activities in non-Annex I Parties. Specifically, the Party reported that Japan has leveraged more than USD 3.8 billion in 2015 and 2016 in private financial flows through co-financing JBIC projects and trade insurance provided by NEXI. During the review, Japan stated that it would like to develop a methodology to track private finance mobilized by other ministries and institutions (e.g. JICA), though it does not have specific plans to do so at this time. The Party also reported on policies that promote the scaling up of private investment in mitigation and adaptation activities in developing country

Parties. Specifically, Japan reported that JBIC has launched an operation called GREEN[6] to support projects that protect the global environment. Under GREEN, JBIC determines the GHG emission reductions associated with each project.

(b) Assessment of adherence to the reporting guidelines

104. The ERT assessed the information reported in the BR3 of Japan and identified issues relating to completeness, transparency and adherence to the UNFCCC reporting guidelines on BRs. The findings are described in table 15.

Table 15
Findings on financial resources from the review of the third biennial report of Japan

No.	*Reporting requirement, issue type and assessment*	*Description of the finding with recommendation or encouragement*
1	Reporting requirement specified in CTF table 7(a) Issue type: completeness Assessment: recommendation	In CTF table 7(a), Japan did not report information on its public financial support to the LDCF, the SCCF and the Adaptation Fund. During the review, in response to a question from the ERT, Japan clarified that it did not provide financial support to these multilateral channels in 2015 or 2016. The ERT recommends that Japan improve the completeness of its reporting by including in its next BR information on whether it contributed to the LDCF, the SCCF and the Adaptation Fund and the amount of that contribution.
2	Reporting requirement specified in CTF table 7(b) Issue type: transparency Assessment: encouragement	In CTF table 7(b), Japan did not report any "additional information". Footnote (e) of that table states that "Parties should report, as appropriate, on project details and the implementing agency". During the review, Japan stated that it aggregates financial support for a number of programmes for each row in CTF table 7(b), and that it is therefore very difficult to provide information on project details and the implementing agency. The ERT encourages Japan to improve the transparency of its reporting by including in its next BR information on project details and the implementing agency in the "additional information" column of CTF table 7(b) for at least those contributions totalling the largest absolute amount.
3	Reporting requirement specified in CTF table 7 Issue type: completeness Assessment: recommendation	In the documentation box for CTF table 7, Japan provided only information on the definitions and methodologies used for reporting information in the "core/general" and "climate-specific" rows but left the other boxes blank. During the review, Japan stated that there is no further information to share. The ERT recommends that Japan improve the completeness of its reporting by fully completing the documentation box for CTF table 7 in its next BR.
4	Reporting requirement specified in paragraph 17 Issue type: completeness Assessment: recommendation	In its BR3, Japan did not report information on financial support to address any economic and social consequences of response measures. During the review, in response to a question from the ERT, Japan stated that it has difficulty in accurately assessing the specific adverse impacts owing to the implementation of response measures and therefore does not have information on any associated financial support. The ERT recommends that Japan improve the completeness of its reporting by including in its next BR information on the financial support it has provided, committed and/or pledged for any economic and social consequences of response measures.

Note: Paragraph number listed under reporting requirement refers to the relevant paragraph of the UNFCCC reporting guidelines on BRs. The reporting on the requirements not included in this table is considered to be complete, transparent and adhering to the UNFCCC reporting guidelines on BRs.

[6] Global Action for Reconciling Economic Growth and Environmental Preservation. For information on the methodology to determine GHG emission reductions, see https://www.jbic.go.jp/wp-content/uploads/page/2016/07/58327/201711_jmrv-guideline_en1.pdf.

3. Technology development and transfer, including information under Article 10 of the Kyoto Protocol

(a) Technical assessment of the reported information

105. Japan provided information on steps, measures and activities related to technology transfer, access and deployment benefiting developing countries, including information on activities undertaken by the public and private sectors. Japan provided examples of support provided for the deployment and enhancement of the endogenous capacities and technologies of non-Annex I Parties. Japan plays a global leadership role in the development and global diffusion of innovative technologies. In 2016, Japan adopted the National Energy and Environment Strategy for Technical Innovation towards 2050 to promote the development of innovative technology, such as fuel cell vehicles and CCS. Japan convenes the Innovation for Cool Earth Forum, a global platform to promote cooperation on innovative technologies. Further, Japan reported that it promotes the global diffusion of low-carbon technologies through co-innovation projects that meet the needs of developing countries, for example through the utilization of satellites for observation, support for formulating strategies to enhance developing countries' adaptive capabilities, and its JCM.

106. The ERT took note of the detailed information provided in CTF table 8 on the 28 technology development and transfer support activities related to mitigation and adaptation planned or implemented in 2015 and 2016 reported by Japan. Of these activities, 7 are undertaken by the public sector alone, 1 by the private sector alone and 20 by both the public and the private sectors. Japan reported that 22 of the activities target mitigation, 2 target adaptation and 4 target both mitigation and adaptation. Japan provided additional information on each measure in the narrative of its BR, but not in CTF table 8. The ERT noted that this additional information is useful and suggests that Japan report it in CTF table 8 of its next BR.

107. The ERT noted that Japan reported detailed information on a success story related to a demonstration project of "green hospitals" in Viet Nam, which installed 1,000 energy-efficient air conditioners at two State-owned hospitals. During the review, the Party clarified that it has not identified any failure stories owing to Japan's use of pilot projects, which, if not successful, are not funded for full implementation.

108. Japan provided information on steps taken to promote, facilitate and finance the transfer of technology to developing countries and to build their capacity in order to facilitate implementation of Article 10 of the Kyoto Protocol.

109. In its BR3, Japan reported on the implementation of JCM projects. There are 17 JCM partner countries with 29 registered projects and 53 measurement, reporting and verification methodologies approved. Moreover, Japan reported that there are more than 120 projects in the pipeline, with an estimated GHG emission reduction potential of 7 Mt CO_2 in 2030. During the review, the Party clarified that nearly all JCM projects relate to the energy sector and utilize technology primarily from Japanese companies.

(b) Assessment of adherence to the reporting guidelines

110. The ERT assessed the information reported in the BR3 of Japan and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

4. Capacity-building

(a) Technical assessment of the reported information

111. In the BR3 and CTF table 9 Japan supplied information on how it has provided capacity-building support for mitigation, adaptation and technology that responds to the existing and emerging needs identified by non-Annex I Parties. Japan described individual measures and activities related to capacity-building support in textual and tabular format.

112. Japan reported that it has supported climate-related capacity development activities relating to the adaptation and mitigation sectors. For the adaptation sector, Japan provided detailed information on its support provided to developing countries related to, inter alia, risk evaluation, impact assessment, the preparation of national adaptation plans and the promotion of adaptation action by the private sector through advanced technology.[7] For the mitigation sector, Japan provided detailed information on its support provided to developing countries related to, inter alia, development, implementation and tracking progress towards countries' NDCs, including preparation of GHG emissions inventories and policy development.

113. Japan also reported that it has responded to the existing and emerging capacity-building needs of non-Annex I Parties by promoting co-innovation that matches the unique needs and challenges of a developing country with the technology and know-how of the government and private sector. To help promote this concept, Japan announced the establishment of the Partnership to Strengthen Transparency for Co-Innovation at COP 23, which will, inter alia, support developing countries in developing, implementing and evaluating progress towards their NDCs, as well as provide climate risk information to improve the transparency of adaptation actions.

(b) Assessment of adherence to the reporting guidelines

114. The ERT assessed the information reported in the BR3 of Japan and recognized that the reporting is complete, transparent and adhering to the UNFCCC reporting guidelines on BRs. No issues relating to the topics discussed in this chapter of the review report were raised during the review.

III. Conclusions and recommendations

115. The ERT conducted a technical review of the information reported in the BR3 and CTF tables of Japan in accordance with the UNFCCC reporting guidelines on BRs. The ERT concludes that the reported information mostly adheres to the UNFCCC reporting guidelines on BRs and provides an overview of emissions and removals related to the Party's quantified economy-wide emission reduction target; assumptions, conditions and methodologies related to the attainment of the target; progress made by Japan in achieving its target; and the Party's provision of support to developing country Parties.

116. Japan's total GHG emissions excluding LULUCF increased by 3.0 per cent between 1990 and 2016, whereas total GHG emissions including net emissions and removals from LULUCF increased by 3.6 per cent over the same period. The increase in total GHG emissions was driven primarily by an increase in CO_2 emissions resulting from energy demand to meet economic growth and from the replacement of nuclear power by fossil fuel-based electricity generation, in particular after the GEJE in 2011. The increase in total GHG emissions was also largely due to a major increase in HFC emissions following the replacement of ozone-depleting substances controlled by the Montreal Protocol with HFCs.

117. Under the Convention, Japan committed itself to achieving a quantified economy-wide emission reduction target of 3.8 per cent or more below the 2005 base-year level by 2020. The target covers CO_2, CH_4, N_2O, HFCs, PFCs, SF_6 and NF_3, expressed using GWP values from the AR4, and covers all sources and sectors included in the annual GHG inventory. Emissions and removals from the LULUCF sector are included in the target, using an activity-based accounting approach, as Japan relies heavily on this sector to achieve its 2020 target, but not in the base year. Japan reported that it plans to make use of market-based mechanisms (JCM credits) to achieve its target. In absolute terms, this means that under the Convention, using the inventory data for 2005 included in the NC, Japan has to reduce its emissions from 1,398,823.62 kt CO_2 eq in the 2005 base year to 1,354,061.26 kt CO_2 eq by 2020.

118. Japan adopted a midterm target of a GHG reduction of 26 per cent by FY2030 compared with the FY2013 level (or 25.4 per cent compared with the FY2005 level). This target was included in Japan's NDC under the Paris Agreement. Japan aims to achieve the

[7] For information, see http://www.adaptation-platform.nies.go.jp/en/lets/adaptationbiz.html/.

midterm target through domestic emission reductions and through removals from elected LULUCF activities. Japan has also set a long-term goal to reduce GHG emissions by 80 per cent by 2050, while pursuing economic growth and socioeconomic objectives.

119. The 1998 Act on Promotion of Global Warming Countermeasures and plans prepared thereunder continue to provide the main legal framework for Japan's energy and climate change goals. The most recent (2016) Plan for Global Warming Countermeasures is the cornerstone of Japan's policy for achieving its NDC by 2030 as it introduces key measures to be implemented by the national Government and local governments, as well as by businesses and citizens. The plan allocates emission reductions by sector and outlines the policies to achieve the reductions. Other key legislation supporting Japan's climate change goals includes the Basic Environment Law (1993), the Act on Rational Use and Proper Management of Fluorocarbons (2013), the Act on the Rational Use of Energy (1979) and the Strategic Energy Plan.

120. The climate policy and to some extent the energy policy of Japan continues to be shaped on two pillars through which mitigation actions with the most significant mitigation impact are implemented. The first pillar is the renewed momentum for the improvement of energy efficiency by promoting highly energy-efficient equipment in final demand sectors and energy efficiency in buildings, which are expected to provide a sizeable contribution to the meeting of Japan's NDC. The second pillar is the maximum use of the potential of renewable energy for electricity and heat generation, further decarbonization of the electricity generation mix by reconnection to the grid of nuclear power plants that meet the increased safety standards, and CCS technology.

121. A highlight of the success of Japan's policy is its remarkable reversal of the trend in emissions from the transport sector, in which further mitigation gains are expected in the future, particularly from the deployment of hybrid and hydrogen vehicles at a large scale. Other highlights are the steep decline in emissions from waste, measures to reduce HFCs and the further enhancement of forest removals. An uncertainty that remains is about the future of Japan's plans to build new coal power plants; if materialized, these plants could offset a major share of the expected mitigation gains. During the review, Japan explained that a regulatory framework based on the Act on the Rational Use of Energy and the Sophisticated Methods of Energy Supply Structures has been introduced for utilizing coal-fired power and that the energy mix and CO_2 emission reduction target for 2030 will be achieved through these efforts. The key cross-sectoral PaMs with tangible impacts are the introduction of a domestic credit scheme to stimulate cost-efficient GHG emission reductions and the additional tax levied on all fossil fuels, the revenue of which is used for financing renewable energy and energy efficiency measures.

122. For 2015 Japan reported in CTF table 4 total GHG emissions excluding LULUCF but including indirect CO_2 emissions of 1,324,717.74 kt CO_2 eq, or 5.3 per cent below the 2005 level. Japan reported on its intention to use JCM credits and LULUCF removals towards achieving its 2020 target. The total estimated removals are 46,900 kt CO_2 eq in 2020 compared with the 1990 level for all elected LULUCF activities.

123. The GHG emission projections provided by Japan in the BR3 correspond to the WEM scenario. Under this scenario, emissions (excluding LULUCF) are projected to be 10.4 per cent above the 1990 level in 2020. In relation to 2005, the base year chosen by Japan for its quantified economy-wide emission reduction target in 2020, emissions (excluding LULUCF) are projected to increase by 0.2 per cent. In 2030, emissions (without LULUCF) are projected to decrease by 14.9 per cent relative to the 1990 level. In relation to 2013, the base year chosen by Japan for its 2030 target, emissions (excluding LULUCF) are projected to decrease by 23.3 per cent. On the basis of the reported information, the ERT concludes that Japan may face challenges in achieving its 2020 target under the WEM scenario. In addition to the contribution of removals from LULUCF, enhancement of existing PaMs will be necessary to achieve the 2020 target. During the review, Japan explained that it does not intend to adopt additional measures but rather to strengthen the implementation of certain adopted PaMs. These include the reconnection of nuclear power plants to the grid, the further deployment of renewable energy, and overseas reduction through JCM.

124. Japan continues to provide climate financing to developing countries in line with climate finance programmes such as ACE 2.0, for which Japan committed JPY 1.3 trillion in public and private climate finance by 2020. Its public financial support in 2015 and 2016 totalled USD 8.96 and 10.89 billion per year, respectively. These totals place Japan among the largest climate finance donors in the world, in particular for the GCF. For those years, Japan provided more support for mitigation than for adaptation, but support for adaptation is growing.

125. Japan provided detailed information on its support for technology development and transfer. Most of the reported activities addressed the mitigation sector and most were undertaken jointly by the public and private sectors. Regarding capacity-building, Japan reported detailed information on efforts to promote co-innovation that matches the unique needs of developing countries with the technology and know-how of the government and private sector. To help promote this concept, Japan announced the establishment of the Partnership to Strengthen Transparency for Co-Innovation at COP 23.

126. In the course of the review, the ERT formulated the following recommendations for Japan to improve its adherence to the UNFCCC reporting guidelines on BRs in its next BR:[8]

(a) To improve the completeness of its reporting by:

(i) Providing information on changes in its domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress towards its economy-wide emission reduction target (see issue 1 in table 5);

(ii) Providing an estimate of mitigation impact (not cumulative) in 2020 for all the mitigation actions listed in CTF table 3 or a reason why such an estimate cannot be provided (see issue 2 in table 5);

(iii) Providing projections related to fuel sold to ships and aircraft engaged in international transport or, if this is not possible, transparently explain the reasons why these projections could not be prepared (see issue 2 in table 11);

(iv) Providing a completed documentation box for CTF table 7 (see issue 3 in table 15);

(v) Providing information on the financial support it has provided, committed and/or pledged for any economic and social consequences of response measures (see issue 4 in table 15);

(vi) Indicating whether it provided support to the LDCF, the SCCF and the Adaptation Fund (CTF table 7(a)) (see issue 1 in table 15);

(b) To improve the transparency of its reporting by:

(i) Providing in CTF table 2(d) a transparent description of the approach used for counting emissions and removals from the elected LULUCF activities in the base year and target year, taking into consideration any relevant decisions adopted by the COP (see issue 1 in table 3);

(ii) Including in CTF table 4 information for the base year on emissions and/or removals from the LULUCF sector based on the accounting approach applied, taking into consideration any relevant decisions of the COP and the activities and/or lands that will be accounted for, and total GHG emissions, including emissions and removals from the LULUCF sector, or providing an explanation why such information is not included (see issue 1 in table 7);

(iii) Providing the coefficients used to apply Rio Markers, the list of sample climate change projects provided to ministries, and the clarification that efficient fossil fuel projects are counted (see issue 1 in table 12).

[8] The recommendations are given in full in the relevant chapters of this report.

Annex

Documents and information used during the review

A. Reference documents

2017 GHG inventory submission of Japan. Available at https://unfccc.int/process/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/submissions/national-inventory-submissions-2017.

2018 GHG inventory submission of Japan. Available at https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/greenhouse-gas-inventories-annex-i-parties/national-inventory-submissions-2018.

BR3 of Japan. Available at https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/national-communications-and-biennial-reports-annex-i-parties/third-biennial-reports-annex-i.

BR3 CTF tables of Japan. Available at https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/national-communications-and-biennial-reports-annex-i-parties/third-biennial-reports-annex-i.

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part I: UNFCCC reporting guidelines on annual greenhouse gas inventories". Annex to decision 24/CP.19. Available at http://unfccc.int/resource/docs/2013/cop19/eng/10a03.pdf.

"Guidelines for the preparation of national communications by Parties included in Annex I to the Convention, Part II: UNFCCC reporting guidelines on national communications". FCCC/CP/1999/7. Available at http://unfccc.int/resource/docs/cop5/07.pdf.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Annex to decision 15/CMP.1. Available at http://unfccc.int/resource/docs/2005/cmp1/eng/08a02.pdf.

"Guidelines for the preparation of the information required under Article 7 of the Kyoto Protocol". Annex III to decision 3/CMP.11. Available at http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf.

"Guidelines for review under Article 8 of the Kyoto Protocol". Annex to decision 22/CMP.1. Available at http://unfccc.int/resource/docs/2005/cmp1/eng/08a03.pdf.

"Guidelines for the technical review of information reported under the Convention related to greenhouse gas inventories, biennial reports and national communications by Parties included in Annex I to the Convention". Annex to decision 13/CP.20. Available at http://unfccc.int/resource/docs/2014/cop20/eng/10a03.pdf.

NC7 of Japan. Available at https://unfccc.int/process-and-meetings/transparency-and-reporting/reporting-and-review-under-the-convention/national-communications-and-biennial-reports-annex-i-parties/seventh-national-communications-annex-i.

Report on the individual review of the annual submission of Japan submitted in 2016. FCCC/ARR/2016/JPN. Available at https://unfccc.int/documents/9730#beg.

Report of the technical review of the second biennial report of Japan. FCCC/TRR.2/JPN. Available at https://unfccc.int/node/66151.

Report on the technical review of the sixth national communication of Japan. FCCC/IDR.6/JPN. Available at https://unfccc.int/node/66151.

Revisions to the guidelines for review under Article 8 of the Kyoto Protocol. Annex I to decision 4/CMP.11. Available at http://unfccc.int/resource/docs/2015/cmp11/eng/08a01.pdf.

"UNFCCC biennial reporting guidelines for developed country Parties". Annex I to decision 2/CP.17. Available at http://unfccc.int/resource/docs/2011/cop17/eng/09a01.pdf.

B. Additional information provided by the Party

Responses to questions during the review were received from Mr. Takashi Morimoto (Mitsubishi UFJ Research & Consulting Co., Ltd.).